**I. Single choice（For each question，only one answer is mostly closed to the question. Find it, and fill the blank with the letter corresponds to the answer.）**

d1. which of the following can be classified as data? ( )

a . numbers

b. video

c. audio

d. all of the above

d2. To store a byte, you need ( ) electronic switch?

a. 1

b. 2

c. 4

d. 8

C3. A byte consists of ( ) bits

a. 2

b. 4

c.8

d. 16

C4. In a set with 64 symbols, each symbol requires a bit pattern length of ( ) bits.

a. 4

b. 5

c. 6

d. 7

d5. How many symbols can be represented by a bit pattern with 10 bits? ( ).

a. 128

b. 256

c. 512

d. 1024

C6. In extended ASC code, a ( ) of the bit pattern for regular ASC code .

a. 0 bit is added to the left

b. 0 bit is added to the right

c. 1 bit is added to the left

d. 1 bit is added to the right

D7. ( ) is a 16-bit code that can represent symbols in language other than English.

a. ASC code

b. Extended ASC code

c. BCD code

d. Unicode

D8. An image can be represented in a computer using the ( ) method.

a. bitmap graphic

b. vector graphic

c. matrix graphic

d. a and b

C9. The bitmap graphic method and the vector graphic method are used to represent ( ) in a computer.

a. audio

b. Video

c. image

d. number

A10. In the ( ) graphic method of representing an image in a computer, each pixel is assigned one or more bit patterns.

a. bitmap

b. vector

c. quantized

d. binary

B11. In the ( ) graphic method of representing an image in a computer, the image is decomposed into a combination of curves and lines.

a. bitmap

b. vector

c. quantized

d. binary

A12 In the ( ) graphic method of representing an image in a computer, rescaling of the image creates a ragged and grainy image.

a. bitmap

b. vector

c. quantized

d. binary

D13. when you want to download music to a computer, the audio signal must be ( ) .

a. sampled

b. quantized

c. coded

d. all of the above

II. Answer questions and Conversion within different number system

1. Given 5 bits, how many distinct 5-bit patterns can you have? 32

2. A student’s grade can be A,B,C,D,F,W (withdraw), or I (incomplete), how many bits are needed to represent the grade?3 bits

3. A company has decided to assign a unique bit pattern to each employee. If the company has 900 employees, what is the minimum number of bits needed to create this representation system? How many pattern are unassigned? If the company hires another 300 employees, should it increase the number of bits? Explain your answer.the minimum number of bits is 10

124 patterns are unassigned

is necessary

4. If you use a 4-bit pattern to represent the digits 0 to 9, how many bit patterns are wasted?6

5. A gray scale picture is digitized using four different gray levels. If the picture is composed of 100×100 pixels, how many bits are needed to represent the picture?10000

6. An audio signal is sampled 800 times per second. Each sample is represented by 256different levels. How many bits per secong are need to represent this signal?256 6400

7. How many hexadecimal digits are needed to convert a 19-bit pattern?5

8. How many octal digits are needed to convert a 19-bit pattern?6

9. How many hexadecimal digits are needed to convert a 6-byte pattern?12

10. Change the following bit pattern to hexadecimal notation.

a. 100011110000 8F0

b. 1000001101 20D

c. 10001 11

d. 11111111 FF

11. Change the following bit pattern to octal notation.

a. 1000111100004360

b. 10000011011015

c. 1000121

d. 11111111377